

Edward Stanley, an eminent surgeon of London, died May 24th, 1862, æt. 69.

Duke Bernard, of Saxe Weimar, æt. 70.

Dr. Bache presented a manuscript from the pen of our venerable fellow-member, Samuel Breck, entitled, "Recollections of my Acquaintance and Association with Deceased Members of the American Philosophical Society," which was referred to the Secretaries.

Pending nominations Nos. 456 to 465 were read.

And the Society was adjourned.

Stated Meeting, September 19, 1862.

Present, nine members.

Dr. WOOD, President, in the Chair.

Letters were received from S. P. Berry, New York, August 23d, 1862, inviting members to attend the funeral of their late fellow-member, G. W. Bethune, and from Louise and Leopold M. and Heinrich Bronn, announcing the death of their husband and father, Dr. H. G. Bronn, a member of this Society, at Heidelberg.

Letters, accepting election, were received from Andrew Ramsay, London, July 1; J. A. Froude, Clinton Place, Hyde Park, June 22; A. W. Hofmann, London, Royal College of Chemistry, June 21; Dr. L. de Koninck, Liege, August 18, 1862.

Letters acknowledging donations in exchange, were received from the Batavian Society of Sciences, the Botanical Society of Canada, the Boston Public Library, the Connecticut Historical Society, the New York State Library, the Pennsylvania State Library, the Pennsylvania Historical Society, the Smithsonian Institution, and the United States National Observatory.

Letters announcing donations to the Library, were received from the R. Acad. at Lisbon, the R. Geog. Society at

London, the Batavian Academy, the Botanical Society of Canada, and the United States Coast Survey.

Donations for the Library were received from the Academies at Vienna, Batavia, Lisbon, and Philadelphia; the Societies at Königsberg, Bath, Kingston, and Boston; the Essex Institute; the Royal London and Dublin Societies; the Observatory at San Fernando; the Ecole des Mines; the Society of Arts, and the London Astronomical, Geographical, Geological, and Asiatic Societies; the American Antiquarian Society, and American Journal of Science; the Hartford Retreat; the Medical News, and Franklin Institute; College of Physicians, and Dr. Dorr, of Philadelphia; the Coast Survey, and Smithsonian Institution; Prof. Tafel, of St. Louis; the Santa Clara College, San Francisco; the State Library, and Board of Regents, at Albany; Prof. Volpicelli, of Rome, and Dr. A. D. Bache.

The deaths of the following members were announced: Dr. H. G. Bronn, at Heidelberg, July 5, 1862, aged 62; Hon. Samuel Breck, at Philadelphia, September 1, 1862, aged 91, announced by Dr. Franklin Bache. On motion of Prof. Cresson, Mr. Joshua Francis Fisher was appointed to prepare an obituary notice of the deceased.

Dr. Coates asked and received permission for the committee to append a note to Dr. Tafel's paper published in the Proceedings.

Prof. Cresson described the remarkable features of the rain-storm which flooded the streams in the neighborhood of this city on the morning of the 12th instant.

The peculiarities noted were the limited area affected and the unusually large quantity of rain-fall at particular points.

The quantity by measurement at the Gas Works, in the First Ward of the city, was $3\frac{6}{10}$ inches, at those in the Fifteenth Ward 6 inches, at the Gas-holder station, in the Twentieth Ward, 9 inches, and at a private mansion in the Twenty-second Ward 6 inches. These points are located on a triangle, whose sides are respectively about 5, 7, and 8 miles long; the First Ward station being at the southern apex, the Twentieth Ward at the northeasternmost angle, 7 miles distant, and the Twenty-second Ward gauge at the north-

western angle, 8 miles from the First Ward, and 5 miles from the Twentieth.

The Fifteenth Ward station is on the western side of the triangle, about 3 miles from the First Ward, 3 from the Twentieth, and 5 from the Twenty-second. Outside of a circle about 8 miles in radius, the centre of which was nearly 2 miles north of the Twentieth Ward station, at Ninth and Diamond Streets, the quantity of rain at this time does not appear to have been such as to produce any noticeable rise of the streams; but within these limits nearly all of the small streams, including the Tacony on the north and the Cohocksink on the south, were swollen beyond any freshet recorded concerning them.

Along the northern margin of the rain there was a remarkable development of electrical disturbance, by which much damage was done to several lines of telegraph wires and instruments.

Prof. Henry added instances to show that it was a general disturbance of the atmosphere, following the course and obeying the laws of the more continuous storms later in the season.

Prof. Lesley described a curtain aurora which he saw on the 23d of July last, near Sydney, Cape Breton.

The positive tone in which the possible nearness of auroral phenomena to the earth's surface is denied by some physicists, makes it desirable that every appearance to the contrary should be mentioned and placed on record. Professor Potter, in *Art. IX, Phil. Mag., No. 158, page 51*, reviewing a paper of De la Rive's in a preceding number, pronounces his own hypothesis,—“that the auroræ boreales are caused by the earth's electro-magnetism acting upon masses of very rare vapors, of like constituents to the meteoric stones and vaporous comets, moving in the planetary spaces under the laws of gravitation, and coming near the boundaries of our atmosphere” —“the only tenable one.” The lowest calculated locality of an observed aurora, according to him, has been one given by Cavendish at fifty-two miles.

It seems unreasonable that the trigonometrical determinations of Halley, Cavendish, Bergman, Dalton, and others, should despotically exclude such observations as those recorded in No. XV of the *Proceedings of the Literary and Philosophical Society of Liverpool*, p. 104, where Dr. Walker, Sir William Hooker, and General Sabine testify that auroras are seen at so low a level that they interpose themselves

between the observer on the ship's deck and the low cliffs of the neighboring shore. This occurred to Dr. Walker in Bellot's Straits.

It was my good fortune to observe an aurora which, to my eyes, was embodied in and swept the earth with successive banks of Cape Breton fog.

It was in the evening of the 23d of July, 1862, on Little Glace Bay, which is one of several indentations in the eastern coast of the island, and about 17 (seventeen) miles, by road, from Sydney. The house in which Captain W. P. Parrot and myself were living was on the northwest side of the narrow bay, not far from its mouth. To the north and east spreads the Gulf of St. Lawrence. To the east by south stretches out the long headlands of Schooner Cove, with the Flint Islands opposite their end. During the five weeks which I spent in the neighborhood, my observations confirmed the account of the inhabitants that an almost perpetual fog-bank rests upon the southern coast and the headlands of Miré Bay, Cow Bay, and Schooner Pond, enveloping the Scatari and Flint Islands, and sweeping obliquely across the gulf to the western shores of Newfoundland; while the indentation of the Glace Bay coast leaves it in the wake of the fog, so to speak, and therefore in sun and moonshine quite as constant.

Auroras are frequent, summer and winter, along this coast. Captain Parrot had seen them during March and April almost nightly; but they were of the common type, arched and waving, and radiant against the north, and not of any peculiar grandeur or brilliancy.

From the 1st to the 23d of July we noticed no aurora of any kind, although some of feeble light might have occurred. The weather was nearly always clear. I remember no local fog at Glace Bay; whereas I repeatedly admired the mountain-like barrier, resembling a sunlit Alpine country, stretched across the southeastern horizon, at a probable distance of from ten to twenty miles, and losing itself in a low perspective towards the distant shores of Newfoundland.

On the evening of the 23d an exclamation of my companion, who was sitting after tea so as to face the window, looking out towards the northeast, announced the phenomenon. Going round the house, we saw what I at once recognized from the plates of the French Expedition to Norway as a curtain aurora. It was totally unlike any aurora we had ever seen, and was evidently connected with a dense broadside of fog, which the south wind had just brought up from the south coast across the Little Glace Bay, and was driving from us northward. In this fog-bank hung, as it were, a brilliant curtain of

light with a wide fringe or flounce, of maximum brilliancy along its bottom edge, the light fading upwards along the curtain, but traceable to the very zenith; and the curtain stretching from the eastern horizon out at sea to the western horizon on the low hill tops. The perspective was perfect. The curtain was evidently vertical, thin, straight, long enough to reach from one limit of the vision to the other, and floating broadside before the south wind towards the north. No reasoning could convince us that these were not elements of the phenomenon, and moreover that the lower edge of the bright fringe was more than one or two hundred yards away, at its nearest point, when we first saw it. Its rate of departure from us was evidently that of the fog-bank, or that of the gentle south wind then blowing. The perspective of the whole curtain changed in conformity with that supposition. We had both spent our lives in topographical work, and no record of triangulations made upon this aurora would alter my convictions of the posture and movements of the beautiful object, derived from the natural triangulations of the unassisted eye.

But this was not all. The two most important features of the exhibition remain to be described.

In the first place the curtain hung not in a perfectly straight plane, but was magnificently waved or folded in recurrent plaits, like the gophered edge of an Elizabethan collar; and these folds were confined chiefly to the lower part of the curtain, or to the flounce of maximum brilliancy, although they sometimes went up high into the thinner body of the curtain. They were sufficiently recurved in some instances for us to see through *three thicknesses* of the flounce, the fold thus almost tripling its own light. But the perspective of each fold was unmistakable; and the impression on the mind was that of the unequal advance of the line of fog-bank, some sections pushing forward and swinging in front of intermediate sections which lagged behind. We saw no material break in the continuity of the light curtain; nor did there seem to be any fixed order of curve, the plaits sometimes lying one way and sometimes another; and therefore no impression of a vortical system was made, but rather of an irregular advance of the fog-bank. The plates of the French Expedition to Norway ("Lottin's Aurora Borealis," 8° and royal 4°), will give a better idea of the structure of the curtain than any description.

The most imposing part of the scene now followed. We had been watching the receding curtain perhaps five or ten minutes, and

it had reached a distance of apparently half a mile or a mile (it may have been more, however, as we had no means of accurate judgment), when we became aware of the passage over us of a second curtain, which soon occupied the place of the first, and went floating off after it towards the north; the interval between them apparently remaining constant, but the brilliancy and definiteness of the second being inferior to the first. And not long afterwards a third passed over us and followed in the rear of the other two, inferior also to the second. We gazed with astonishment and delight upon all three together, until they became an indistinctly defined common aurora in the north. Soon afterwards the clouds increased; the fog became denser; the light in the northern heavens was broken by bars and patches of black, and we retired into the house.

I am curious to learn whether in any part of the United States or Canada an aurora was seen on the evening named, and whether anything unusual was noticed in its appearance. But my belief is, that the phenomenon was modified to the folded curtain form in that particular locality, by reason of the peculiar parallel structure of the front part of the fog-bank which that night took possession of the surface of Cape Breton at its eastern end. Professor Stephen Alexander of Princeton informs me that this form of aurora was frequently seen by him on the coast of Labrador.

Prof. Henry described an aurora which he saw on the 4th of August last, at the Smithsonian Institution.

Prof. Bache referred to Mr. Espy's observations of auroras, by which he proved that the trigonometrical calculations or determinations of their heights by parallax were unreliable, and adduced instances to show that different observers do not behold the same phenomenon at the same moment.

Dr. Wood described the effects of lightning upon Dr. Wistar's house, north of Philadelphia.

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And the Society was adjourned.